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**JUMO Process Control, Inc.**  
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# JUMO dTRANS p31

## Pressure transmitter for elevated media temperatures

### General application

Pressure transmitters are used for measuring the relative (gauge) and absolute pressures in liquids and gases. The pressure transmitter operates on the piezo-resistive measuring principle. The pressure is converted into an electrical signal.



Type 402050

### Technical data

Reference conditions	To DIN 16086 and IEC 770/5.3
Ranges	See order details
Overload limit	All ranges 3× full scale
Bursting pressure	All ranges 4× full scale
Parts in contact with medium	Standard: stainless steel 316 Ti/316 L
Output	
0 to 20 mA, two-wire (output 402)	Burden ≤ (U <sub>B</sub> -12 V) ÷ 0.02 A
4 to 20 mA, two-wire (output 405)	Burden ≤ (U <sub>B</sub> -10 V) ÷ 0.02 A
4 to 20 mA, three-wire (output 406)	Burden ≤ (U <sub>B</sub> -12 V) ÷ 0.02 A
0,5 to 4,5 V, three-wire (output 412)	Burden ≥ 50 kΩ
0 to 10 V, three-wire (output 415)	Burden ≥ 10 kΩ
1 to 5 V, three-wire (output 418)	Burden ≥ 10 kΩ
1 to 6 V, three-wire (output 420)	Burden ≥ 10 kΩ
Burden error	< 0.5 % max.
Zero offset	≤ 0.3 % MSP (measuring span)
Thermal hysteresis	≤ ±0.5 % MSP (within compensated temperature range)
Ambient temperature error	Within range 0 to 100 °C (compensated temperature range)
Zero	≤ 0.02 %/K typical, ≤ 0.04 %/K max.
Measuring span	≤ 0.02 %/K typical, ≤ 0.04 %/K max.
Deviation from characteristic	≤ 0.5 % MSP (limit point setting)
For basic type extension 023	≤ 0.2 % MSP (limit point setting)
Hysteresis	≤ 0.1 % MSP

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Repeatability	≤ 0.05 % MSP
Response time	
Current output	
0 to 20 mA, two-wire (output 402)	≤ 3 msec max.
4 to 20 mA, two-wire (output 405)	≤ 3 msec max.
4 to 20 mA, three-wire (output 406)	≤ 3 msec max.
Voltage output	
0,5 to 4,5 V, three-wire (output 412)	≤ 10 msec max.
0 to 10 V, three-wire (output 415)	≤ 10 msec max.
1 to 5 V, three-wire (output 418)	≤ 10 msec max.
1 to 6 V, three-wire (output 420)	≤ 10 msec max.
Stability over 1 year	≤ 0.5 % MSP
Voltage supply <sup>a</sup>	
0 to 20 mA, two-wire (output 402)	DC 11,5 to 30 V
4 to 20 mA, two-wire (output 405)	DC 10 to 30 V
4 to 20 mA, three-wire (output 406)	DC 11,5 to 30 V
0,5 to 4,5 V, three-wire (output 412)	DC 5 V
0 to 10 V, three-wire (output 415)	DC 11,5 to 30 V
1 to 5 V, three-wire (output 418)	DC 10 to 30 V
1 to 6 V, three-wire (output 420)	DC 10 to 30 V
Max. current drawn	Approx. 25 mA
Voltage supply influence	≤ 0.02 %/V, nominal voltage supply DC 24 V ratiometric with voltage supply DC 5 V (±0.5 V)
Permissible ambient temperature (max. housing temperature)	-20 to +125 °C
Storage temperature	-40 to +125 °C
Permissible temperature of medium	-30 to +200 °C
Electromagnet compatibility	EN 61326
Interference emission	Class B
Interference immunity	Industrial requirements
Mechanical shock <sup>b</sup>	100 g/1 msec
Mechanical vibration <sup>c</sup>	Max. 20 g at 15 to 2000 Hz
Protection type <sup>d</sup>	
Terminal box (electrical connection 12)	IP67
Round plug M12 × 1 (electrical connection 36)	IP67
Cable socket (electrical connection 61)	IP65 (connecting cable diameter min. 5 mm, max. 7 mm)
Housing	Stainless steel, mat. ref. 1.4301 Polycarbonate GF
Pressure connection	See order details; other connections on request
Electrical connection	See order details
Terminal box (electrical connection 12)	4-pole, PVC cable, length 2 m, other length on request
Round plug M12 × 1 (electrical connection 36)	4-pole
Cable socket (electrical connection 61)	To DIN EN 175301-803, conductor cross-section up to max. 1.5 mm <sup>2</sup>
Nominal position	Any
Weight	200 g

<sup>a</sup> Ripple: The voltage spikes must **not** go above or below the values specified for the supply.

<sup>b</sup> DIN IEC 68-2-27

<sup>c</sup> DIN IEC 68-2-6

<sup>d</sup> EN 60529

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## Connection diagram

The connection diagram in the data sheet provides preliminary information about the connection options. For the electrical connection only use the installation instructions or the operating manual. The knowledge and the correct technical execution of the safety information/instructions contained in these documents are mandatory for installation, electrical connection, startup, and for safety during operation.

Connection		Terminal assignment		
		12 Fixed cable	36 Round plug M12 × 1	61 Cable socket
Voltage supply DC 10 to 30 V DC 11,5 to 30 V DC 5 V		White Grey	1+ 3-	1 L+ 2 L-
Output 1 to 6 V 0 to 10 V 0,5 to 4,5 V		Grey Yellow	3- 4+	2 - 3 +
Output 4 to 20 mA, two-wire		White Grey Proportional current 4 to 20 mA in voltage supply	1+ 3-	1 + 2 -
Output 0(4) to 20 mA, three-wire		Grey Yellow	3- 4+	2 - 3 +
Protection conductor				
Screen		Black	2	
Caution: Earth device (pressure connection and/or  or screen)!				

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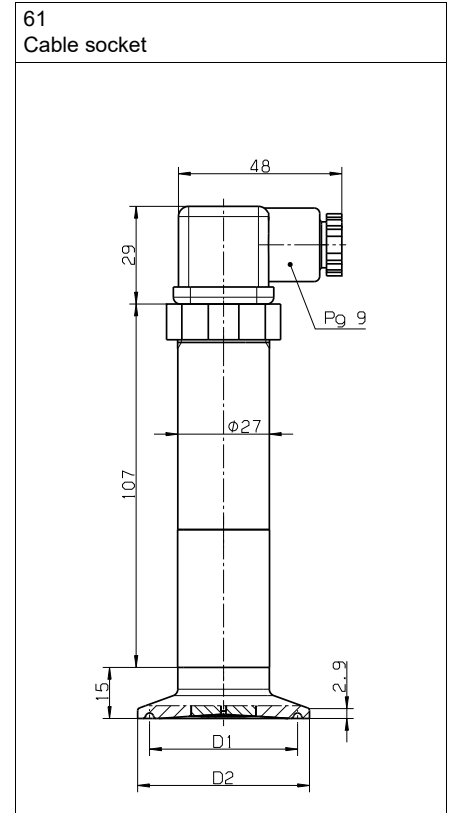
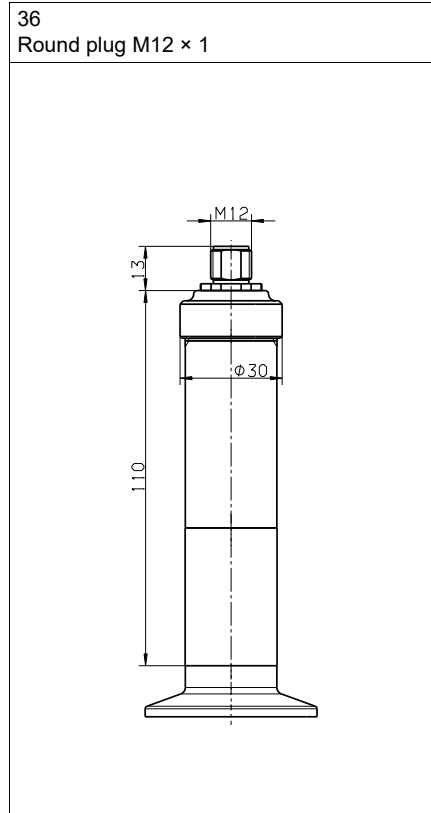
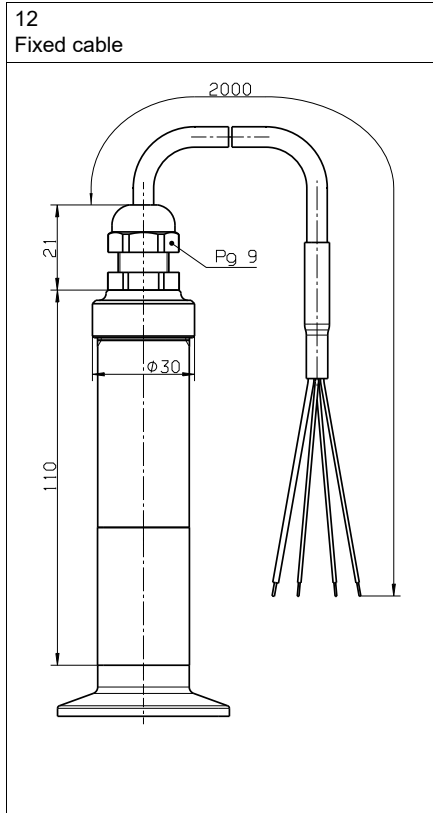
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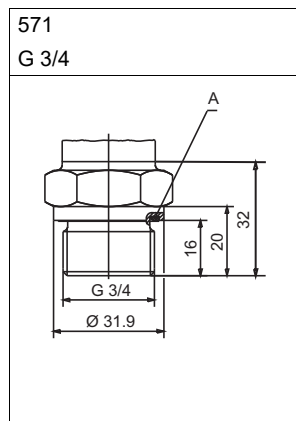
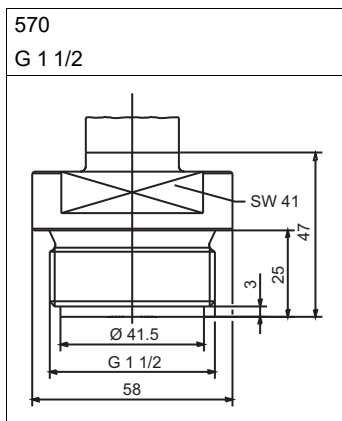


# Dimensions

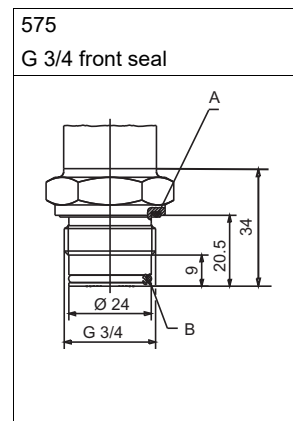
## Electrical connection



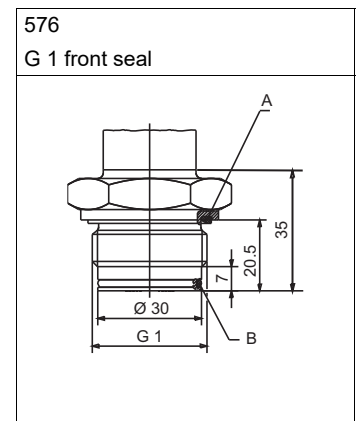
## Process connection, front-flush



A Profile seal



A Profile seal  
B O-ring



A Profile seal  
B O-ring

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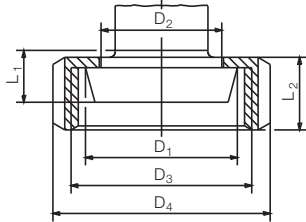
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603 to 607

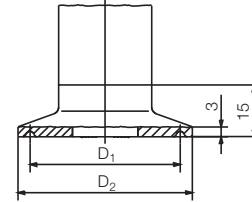
Taper socket with grooved union nut



Process connection	DN	Ø D <sub>1</sub>	Ø D <sub>2</sub>	Ø D <sub>3</sub>	Ø D <sub>4</sub>	L <sub>1</sub>	L <sub>2</sub>
603	20	36.5	30	RD 44 × 1/6	54	13	21
604	25	44	35	RD 52 × 1/6	63	15	
605	32	50	41	RD 58 × 1/6	70		
606	40	56	48	RD 65 × 1/6	78		
607	50	68.5	61	RD 78 × 1/6	92	16	22

612 to 616

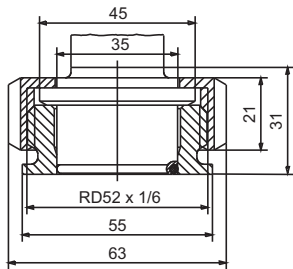
Clamp



Process connection	DN DIN 32676	DN (Zoll)	Nominal Size ISO 2852	Ø D <sub>1</sub>	Ø D <sub>2</sub>
612	20		12	27.5	34
	15		12.7		
			17.2		
			21.3		
613	25	1"	25	43.5	50.5
	32	1.5"	33.7		
	40		38		
616	50	2"	40	56.5	64
			51		

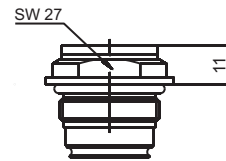
652

Tank connection with grooved union nut



997

Adapter system JUMO PEKA



Suitable for the adapter system JUMO PEKA, see data sheet 409711

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**Order details**

<b>(1) Basic type</b>	
402050/000	JUMO dTRANS p31 – Pressure transmitter for elevated media temperatures
402050/023	JUMO dTRANS p31 – Pressure transmitter for elevated media temperatures, reduced deviation from characteristic <sup>a</sup>
402050/999	JUMO dTRANS p31 – Pressure transmitter for elevated media temperatures, special version
<b>(2) Input</b>	
454	0 to 1 bar relative pressure
455	0 to 1,6 bar relative pressure
456	0 to 2,5 bar relative pressure
457	0 to 4 bar relative pressure
458	0 to 6 bar relative pressure
459	0 to 10 bar relative pressure
460	0 to 16 bar relative pressure
461	0 to 25 bar relative pressure
462	0 to 40 bar relative pressure
463	0 to 60 bar relative pressure
478	-1 to 0 bar relative pressure
479	-1 to +0,6 bar relative pressure
480	-1 to +1,5 bar relative pressure
481	-1 to +3 bar relative pressure
482	-1 to +5 bar relative pressure
483	-1 to +9 bar relative pressure
484	-1 to +15 bar relative pressure
485	-1 to +24 bar relative pressure
488	0 to 1 bar absolute pressure
489	0 to 1,6 bar absolute pressure
490	0 to 2,5 bar absolute pressure
491	0 to 4 bar absolute pressure
492	0 to 6 bar absolute pressure
493	0 to 10 bar absolute pressure
494	0 to 16 bar absolute pressure
495	0 to 25 bar absolute pressure
998	Sondermessbereich absolute pressure
999	Sondermessbereich relative pressure
<b>(3) Output</b>	
402	0 to 20 mA, three-wire
405	4 to 20 mA, two-wire
406	4 to 20 mA, three-wire
412	0,5 to 4,5 V, three-wire
415	0 to 10 V, three-wire
418	1 to 5 V, three-wire
420	1 to 6 V, three-wire
<b>(4) Process connection</b>	
550	Aseptic to DIN 11864-1A, DN 20
551	Aseptic to DIN 11864-1A, DN 25
552	Aseptic to DIN 11864-1A, DN 32
553	Aseptic to DIN 11864-1A, DN 40
554	Aseptic to DIN 11864-1A, DN 50
570	G 1 1/2 front-flush, DIN EN ISO 228-1
571	G 3/4 front-flush, DIN EN ISO 228-1
575	G 3/4 front-flush with double seal

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576	G 1 with double seal
584	SMS, DN 1
585	SMS, DN1 1/2
586	SMS, DN 2
603	Taper socket with grooved union nut DN 20, to DIN 11851 (dairy pipe fitting)
604	Taper socket with grooved union nut DN 25, to DIN 11851 (dairy pipe fitting)
605	Taper socket with grooved union nut DN 32, to DIN 11851 (dairy pipe fitting)
606	Taper socket with grooved union nut DN 40, to DIN 11851 (dairy pipe fitting)
607	Taper socket with grooved union nut DN 50, to DIN 11851 (dairy pipe fitting)
612	Clamping socket (clamp) DN 10, DN 15, DN 20 <sup>b</sup> to DIN 32676
613	Clamping socket (clamp) DN 25, DN 40 <sup>b</sup> to DIN 32676
616	Clamping socket (clamp) DN 50 (2") <sup>b</sup> to DIN 32676
619	Clamping socket (clamp) DN 15 (3/4") <sup>b</sup> to DIN 32676
623	Small flange DN 25, to DIN 28403
652	Tank connection with grooved union nut DN 25
661	Clamping flange (DRD), Ø 65 mm
684	VARIVENT® connection, DN 15/10
685	VARIVENT® connection, DN 32/25
686	VARIVENT® connection, DN 50/40
997	JUMO-PEKA with EHEDG certification <sup>c</sup>
<b>(5) Process connection material</b>	
20	CrNi (stainless steel)
<b>(6) Electrical connection</b>	
12	Terminal box, screened, 2 m (other length on request)
36	Round plug M12 × 1
61	Cable socket DIN EN 175301-803, form A
<b>(7) Extra codes</b>	
000	None
452	Parts in contact with the medium are electropolished, surface roughness Ra ≤ 0.8 µm
631	Improved moisture and vibration protection

<sup>a</sup> A reduced deviation from characteristic is not available for ± ranges; it is available only in conjunction with 4 to 20 mA, two-wire (output 405).

<sup>b</sup> These process connections are only suitable with measuring spans up to 25 bar.

<sup>c</sup> Suitable process connection adapter, see data sheet 409711

<b>Order code</b>	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<b>Order example</b>	402050/000	- 459	- 405	- 571	- 20	- 61	/ 000

**Accessories**

Article	Part no.
Cable box (straight) with control cable, screen, 4-pole, 5 m PVC cable, pressure compensation	00512341